

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) Disc A disc drive apparatus ~~(1)~~ for ~~writing and/or reading~~ writing/reading information into and/or from a disc ~~(2)~~, comprising:

a controllable motor ~~(4)~~ for rotating a disc ~~(2)~~; and

a control unit ~~(90)~~ having a first output ~~(91)~~ for generating a control signal ~~(SCM)~~ for said motor ~~(4)~~;

wherein the control unit ~~(90)~~ ~~is designed to be capable of operating in a FAN mode (SM2) in which said motor (4) is rotated without any writing and/or reading being executed by the disc drive apparatus configured to switch modes of operation to a turntable mode in which said motor is rotated without a disc being present.~~

2. (Currently Amended) Disc The disc drive apparatus according

to claim 1, further comprising temperature measuring means (50) for generating a measuring signal (ST) indicating a temperature (T) occurring within the disc drive apparatus, the temperature measuring means (50) ~~preferably being arranged for measuring~~ configured to measure the temperature of a disc drive component;

wherein said control unit (90) has a signal input (95) coupled to said temperature measuring means (50), and is ~~designed~~ configured to enter said FAN a fan mode (SM2) in response to the measuring signal (ST) received from said temperature measuring means (50), wherein in the fan mode the motor is rotated without any writing and/or reading being executed by the disc drive apparatus.

3. (Currently Amended) ~~Disc~~ The disc drive apparatus according to claim 2, wherein said control unit (90) is ~~designed~~ configured to enter (step 203) said FAN fan mode (SM2) if, at the completion of a write/read operation, said measuring signal (ST) indicates a temperature (T) above a first threshold temperature (T1), for instance 60 °C.

4. (Currently Amended) ~~Disc drive apparatus according to claim~~
~~2, A disc drive apparatus for writing/reading information into~~
~~and/or from a disc, comprising:~~

a controllable motor for rotating a disc;

a control unit having a first output for generating a control
signal for said motor; and

temperature measuring means for generating a measuring signal
indicating a temperature occurring within the disc drive apparatus,
the temperature measuring means being configured to measure the
temperature of a disc drive component;

wherein the control unit is configured to operate in a fan
mode in which said motor is rotated without any writing and/or
reading being executed by the disc drive apparatus;

wherein the control unit has a signal input coupled to said
temperature measuring means, and is further configured to enter
said fan mode in response to the measuring signal received from
said temperature measuring means; and

wherein said control unit (90) is designed further configured
to monitor said measuring signal (ST) during a write/read
operation, to set (step 211) a first flag (FT1) in response to

receiving the measuring signal ~~(ST)~~ indicating a temperature ~~(T)~~ above a first threshold temperature ~~(T1)~~, ~~for instance 60 °C~~, and to enter ~~(step 214)~~ said ~~FAN~~ fan mode ~~(SM2)~~ if, at the completion of ~~a~~ the write/read operation, said first flag ~~(FT1)~~ is set.

5. (Currently Amended) ~~Disc~~ The disc drive apparatus according to claim 4, wherein said control unit ~~(90)~~ is ~~designed to monitor said measuring signal (ST) during a write/read operation, and further configured to reset (step 213)~~ said first flag ~~(FT1)~~ in response to receiving the measuring signal ~~(ST)~~ indicating a temperature ~~(T)~~ below said first threshold temperature ~~(T1)~~.

6. (Currently Amended) ~~Disc~~ The disc drive apparatus according to claim 1, wherein said control unit ~~(90)~~ is ~~designed further configured to set, in said FAN a fan mode (SM2), a rotational speed of said motor (4) at a predetermined safety value (s2) selected for optimum cooling effect, wherein in the fan mode the motor is rotated without any writing and/or reading being executed by the disc drive apparatus.~~

7. (Currently Amended) ~~Disc~~ The disc drive apparatus according to claim 1, wherein said control unit ~~(90)~~ is designed further configured to set, in said FAN a fan mode (SM2), a rotational speed of said motor (4) at a predetermined safety value (42) selected for low audibility, wherein in the fan mode the motor is rotated without any writing and/or reading being executed by the disc drive apparatus.

8. (Currently Amended) ~~Disc~~ The disc drive apparatus according to claim 1, wherein said control unit ~~(90)~~ is designed further configured to start (step 215) a first timer (TIM1) on transition to said FAN a fan mode (SM2), and to exit said FAN fan mode (SM2) after a first predetermined time (p1) determined by said first timer (TIM1), wherein in the fan mode the motor is rotated without any writing and/or reading being executed by the disc drive apparatus.

9. (Currently Amended) ~~Disc drive apparatus according to claim 2,~~ A disc drive apparatus for writing/reading information into and/or from a disc, comprising:

a controllable motor for rotating a disc;
a control unit having a first output for generating a control
signal for said motor; and
temperature measuring means for generating a measuring signal
indicating a temperature occurring within the disc drive apparatus,
the temperature measuring means being configured to measure the
temperature of a disc drive component;
wherein the control unit is configured to operate in a fan
mode in which said motor is rotated without any writing and/or
reading being executed by the disc drive apparatus;
wherein the control unit has a signal input coupled to said
temperature measuring means, and is further configured to enter
said fan mode in response to the measuring signal received from
said temperature measuring means; and
wherein said control unit (90) is ~~designed~~ further configured
to monitor said measuring signal (ST) during a write/read
operation, to set ~~(step 222; step 232)~~ a timer (TIM2; TIM3) in
response to receiving the measuring signal (ST) indicating a
temperature (T) above a second threshold temperature (T2) higher
than ~~said a~~ first threshold temperature (T1), for instance 70 °C,

and to enter said ~~FAN-fan mode (SM2)~~ if, after a predetermined time ~~(p2, p3)~~ determined by said timer ~~(TIM1, TIM3)~~, said measuring signal ~~(ST)~~ still indicates a the temperature ~~(T)~~ is above said second threshold temperature ~~(T2)~~.

10. (Currently Amended) ~~Disc~~ The disc drive apparatus according to claim 1, wherein the control unit ~~(90)~~ is designed to be capable of operating further configured to operate the disc drive apparatus in a duty cycle mode ~~(DCM)~~ in which the control unit ~~(90)~~ is alternately alternately operative in a normal mode portion ~~(NMP)~~ during which the writing/reading is performed, and in an energy saving mode portion ~~(ESMP)~~ during which the writing/reading is temporarily suspended while rotation of said motor ~~(4)~~ is continued.

11. (Currently Amended) ~~Disc~~ The disc drive apparatus according to claim 10, wherein the control unit ~~(90)~~ is designed further configured to maintain the a rotational speed of the motor ~~(4)~~ substantially constant during the duty cycle mode ~~(DCM)~~.

12. (Currently Amended) ~~Disc drive apparatus according to claim 10,~~ A disc drive apparatus for writing/reading information into and/or from a disc, comprising:

a controllable motor for rotating a disc; and

a control unit having a first output for generating a control signal for said motor;

wherein the control unit is configured to operate in a fan mode in which said motor is rotated without any writing and/or reading being executed by the disc drive apparatus;

wherein the control unit is further configured to operate the disc drive apparatus in a duty cycle mode in which the control unit is alternately operative in a normal mode portion during which the writing/reading is performed, and in an energy saving mode portion during which the writing/reading is temporarily suspended while rotation of said motor is continued; and

wherein the duty cycle mode (DCM) has a cycle duration selected in the range of 1-10 sec, preferably in the order of about 5 sec.

13. (Currently Amended) ~~Disc~~ The disc drive apparatus

according to claim 12, wherein the duty cycle mode (DCM) has a duty cycle ~~in the order of~~ about 50%.

14. (Currently Amended) ~~Disc~~ The disc drive apparatus according to claim 10, further comprising temperature measuring means (50) for generating a measuring signal (ST) indicating a temperature (T) occurring within the disc drive apparatus, the temperature measuring means (50) ~~preferably being arranged for measuring~~ configured to measure the temperature of a disc drive component;

wherein said control unit (90) has a signal input (95) coupled to said temperature measuring means (50), and is ~~designed further~~ configured to monitor said measuring signal (ST) during a write/read operation, and to enter said duty cycle mode (DCM) in response to receiving the measuring signal (ST) indicating a temperature (T) above a second threshold temperature (T2) higher than ~~said a first threshold temperature (T1)~~.

15. (Currently Amended) ~~Disc drive apparatus according to claim 10, comprising~~ A disc drive apparatus for writing/reading

information into and/or from a disc, comprising:

a controllable motor for rotating a disc; and

a control unit having a first output for generating a control
signal for said motor; and

temperature measuring means ~~(50)~~ for generating a measuring
signal ~~(ST)~~ indicating a temperature ~~(T)~~ occurring within the disc
drive apparatus, the temperature measuring means ~~(50)~~ preferably
being arranged for measuring configured to measure the temperature
of a disc drive component;

wherein the control unit is configured to operate in a fan
mode in which said motor is rotated without any writing and/or
reading being executed by the disc drive apparatus;

wherein the control unit is further configured to operate the
disc drive apparatus in a duty cycle mode in which the control unit
is alternately operative in a normal mode portion during which the
writing/reading is performed, and in an energy saving mode portion
during which the writing/reading is temporarily suspended while
rotation of said motor is continued; and

wherein said control unit ~~(90)~~ has a signal input ~~(95)~~ coupled
to said temperature measuring means ~~(50)~~, and is designed further

configured to monitor said measuring signal ~~(ST)~~ during a write/read operation, to set a timer in response to receiving the measuring signal ~~(ST)~~ indicating a temperature ~~(T)~~ above ~~said a~~ second threshold temperature ~~(T2)~~, and to enter said duty cycle mode ~~(DCM)~~ if, after a predetermined time determined by said timer, said measuring signal ~~(ST)~~ still indicates ~~a~~ the temperature ~~(T)~~ is above a second threshold temperature ~~(T2)~~ higher than ~~said a~~ first threshold temperature ~~(T1)~~.

16. (Currently Amended) ~~Disc~~ The disc drive apparatus according to claim 1, wherein the control unit ~~(90)~~ is designed to be capable of operating in further configured to switch the modes of operation to a first safety mode (SM1) during which the writing/reading is performed at a first predetermined safety speed ~~(e1)~~.

17. (Currently Amended) ~~Disc drive apparatus according to claim 16,~~ A disc drive apparatus for writing/reading information into and/or from a disc, comprising:
a controllable motor for rotating a disc; and

a control unit having a first output for generating a control signal for said motor;

wherein the control unit is configured to switch modes of operation to a fan mode in which said motor is rotated without any writing and/or reading being executed by the disc drive apparatus;

wherein the control unit is further configured to switch the modes of operation to a first safety mode during which the writing/reading is performed at a first predetermined safety speed;
and

wherein said control unit ~~(90)~~ is ~~designed~~ further configured to make a transition to said first safety mode ~~(SM1)~~ in response to receiving the measuring signal ~~(ST)~~ indicating a temperature ~~(T)~~ above said ~~second~~ a threshold temperature ~~(T2)~~, and to make a transition from said first safety mode ~~(SM1)~~ to said ~~a~~ duty cycle mode ~~(DCM)~~ if, after said ~~a~~ predetermined time determined by said timer, said measuring signal ~~(ST)~~ still indicates ~~a~~ the temperature ~~(T)~~ is above said ~~second~~ threshold temperature ~~(T2)~~.

18. (Currently Amended) Disc ~~The disc~~ drive apparatus according to claim 1, wherein the disc drive apparatus is an

optical disc drive apparatus comprising a controllable light beam generator ~~(31), typically a laser;~~

wherein said control unit ~~(90)~~ has a second output ~~(92)~~ for generating a control signal ~~(SCL)~~ for said light beam generator ~~(31);~~

and wherein the control unit ~~(90)~~ is designed further configured to switch OFF off said light beam generator (31) while operating in said FAN a fan mode (SM2) where the motor is rotated without any writing and/or reading being executed by the disc drive apparatus.

19. (Currently Amended) ~~Disc~~ The disc drive apparatus according to claim 18, further comprising temperature measuring means ~~(50)~~ for generating a measuring signal ~~(ST)~~ indicating a temperature ~~(T)~~ occurring within the disc drive apparatus, the temperature measuring means ~~(50)~~ being arranged for measuring configured to measure the temperature of said light beam generator ~~(31).~~

20. (Currently Amended) ~~Disc~~ The disc drive apparatus

according to claim 1, further comprising at least one controllable functional unit ~~(40)~~;

wherein said control unit ~~(90)~~ has a ~~third~~ second output ~~(94)~~ for generating a control signal ~~(SCU)~~ for said at least one controllable functional unit ~~(40)~~;

and wherein the control unit ~~(90)~~ is designed further configured to switch OFF off said at least one controllable functional unit (40) while operating in said FAN a fan mode (SM2) where the motor is rotated without any writing and/or reading being executed by the disc drive apparatus.

Claim 21 (Canceled)

22. (Currently Amended) ~~Disc~~ The disc drive apparatus according to ~~claim 21~~ claim 1, comprising temperature measuring means ~~(50)~~ for generating a measuring signal ~~(ST)~~ indicating a temperature ~~(T)~~ occurring within the disc drive apparatus, the temperature measuring means ~~(50)~~ preferably being arranged for measuring configured to measure the temperature of a disc drive component;

wherein said control unit ~~(90)~~ has a signal input ~~(95)~~ coupled to said temperature measuring means ~~(50)~~, and is ~~designed further configured to enter (step 272)~~ said ~~FAN2-TURNTABLE (SM4)~~ turntable mode if, in an idle state with no disc loaded, said measuring signal ~~(ST)~~ indicates a the temperature (T) is above a threshold temperature (T1), for instance 60 °C.

23. (Currently Amended) ~~Disc drive apparatus according to claim 21,~~ A disc drive apparatus for writing/reading information into and/or from a disc, comprising:

a controllable motor for rotating a disc; and

a control unit having a first output for generating a control signal for said motor;

wherein the control unit is configured to switch modes of operation to a fan mode in which said motor is rotated without any writing and/or reading being executed by the disc drive apparatus;

wherein the control unit is further configured to switch modes a turntable mode in which said motor is rotated without a disc being present; and

wherein said control unit ~~(90)~~ is designed configured to start

~~(step 273) a fifth timer (TIM5) on transition to said FAN2~~
~~TURNTABLE (SM4) turntable mode, and to exit said FAN2 TURNTABLE~~
~~(SM4) turntable mode after a fifth predetermined time (ps)~~
determined by said ~~fifth timer (TIM5)~~.